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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/068,472

02/08/2002

Erik V. Johnson

120-294

8913

34845

7590

09/11/2008

Anderson Gorecki & Manaras LLP

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ACTON, MA 01720

EXAMINER

LAVARIAS, ARNEL C

ART UNIT

PAPER NUMBER

2872

NOTIFICATION DATE

DELIVERY MODE

09/11/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/068,472	<b>Applicant(s)</b> JOHNSON ET AL.	
	<b>Examiner</b> Arnel C. Lavarias	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-18 is/are pending in the application.
- 4a) Of the above claim(s) 7-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Terminal Disclaimer***

1. The terminal disclaimer filed on 6/17/08 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6636337 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Drawings***

2. The replacement drawings were received on 6/17/08. These drawings are acceptable.

### ***Response to Amendment***

3. The amendments to the abstract of the disclosure in the submission dated 6/17/08 are acknowledged and accepted. In view of these amendments, the objections to the specification in Section 7 of the Office Action dated 1/18/08 are respectfully withdrawn.
4. The amendments to Claims 1, 6 in the submission dated 6/17/08 are acknowledged and accepted.
5. The cancellation of Claims 2, 5 in the submission dated 6/17/08 is acknowledged and accepted.
6. In view of the amendments made to the claims above, the objections to the claims in Section 9 of the Office Action dated 1/18/08 are respectfully withdrawn.

***Response to Arguments***

7. In view of the submission of a proper terminal disclaimer, the double patenting rejections in Section 11 of the Office Action dated 1/18/08 are respectfully withdrawn.
8. The Applicants' arguments filed 6/17/08 have been fully considered but they are not persuasive.
9. The Applicants argue that since inventor Erik V. Johnson has been removed from the list of inventors for the instant application, Brzozowski et al. is no longer available as prior art against the instant application. The Examiner respectfully disagrees. It is noted that no petition to correct inventorship under 37 CFR 1.48 has been filed in the instant application. Thus, the inventive entity for the instant application is Erik V. Johnson, Edward H. Sargent, and Lukasz Brzozowski. This inventive entity is different than that of the list of authors of the Brzozowski et al. reference.
10. Claims 1, 3-4, 6 are now rejected as follows.

***Claim Rejections - 35 USC § 102 and 35 USC § 103***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:  
  
A person shall be entitled to a patent unless –  
  
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.  
  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
14. Claims 1, 3-4, 6 are rejected under 35 U.S.C. 102(a) as being anticipated by Brzozowski et al. (L. Brzozowski, E. H. Sargent, 'Photonic crystals for integrated optical computing', Proc. SPIE, vol. 4089, June 18, 2000, pp. 786-796), of record.

Brzozowski et al. discloses an entirely passive all-optical device (See Page 788, Section II; Page 789, Section IIIa; Page 791, Section IIIc) comprising a stack (See Figure 1) of a plurality of alternating layers of a first medium and a second medium (See light and dark shaded layers in Figure 1), each medium characterized by a Kerr coefficient having one of a negative nonlinear coefficient and a positive nonlinear coefficient, each medium further characterized by a linear index of refraction, the Kerr coefficients of the first and second media being of opposite sign and substantially equal in magnitude or absolute value (See Pages 788-790, 791-793), the linear indices of refraction of the first and second media having substantially different magnitudes, the alternating layers

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arranged such that the medium having the higher linear index of refraction has the negative nonlinear coefficient and the medium having the lower linear index of refraction has the positive nonlinear coefficient (See specifically Page 791, Section IIIc).

Brzozowski et al. additionally discloses the optical device providing a first transmittance curve substantially equal to an S-curve (See Figure 6).

Further Brzozowski et al. discloses an optical hard limiter (See Page 788, Section II; Page 789, Section IIIa; Page 791, Section IIIc) comprising an entirely passive all-optical device (See Figure 1) consisting of alternating layers of materials (See light and dark shaded layers in Figure 1) having oppositely signed Kerr coefficients and substantially different linear indices of refraction, wherein the higher linear index material has the negative Kerr coefficient and the lower linear index material has the positive Kerr coefficient (See Pages 788-790, 791-793). Brzozowski et al. additionally discloses transmitted characteristics of the optical hard limiter comprising a first range bounded by input signals in the range of approximately zero to  $I_1$  in which the transmitted output signal of the stable, non-absorbing optical hard limiter is approximately zero; a second range bounded by input signals in the range approximately from  $I_1$  to  $I_2$  in which the transmitted output signal of the stable, non-absorbing optical hard limiter increases from zero to  $I_2$ ; and a third range bounded by input signals in the range above approximately  $I_2$  in which the transmitted output signal of the stable, non-absorbing optical hard limiter is approximately  $I_2$ , where  $I_1$  is approximately half of  $I_2$  (See Figure 6, particularly for the case where  $N=1000$ , where  $N$  is the number of periods of alternating Kerr layers in Figure 1).

Finally, Brzozowski et al. discloses an optical logic device (See Page 788, Section II; Page 789, Section IIIa; Page 791, Section IIIc; Page 793, Section IIId) for processing information optically using the transmitted or reflected characteristics of at least one stable, non-absorbing optical hard limiter (See Figure 9; Pages 793-794).

15. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith (U.S. Patent No. 4507776), of record.

Smith discloses an optical logic device for processing information optically using the transmitted or reflected characteristics of at least one stable, non-absorbing optical hard limiter (See Figures 1-5; col. 2, line 46-col. 5, line 24).

16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salehi et al. (J. A. Salehi, C. A. Brackett, "Code division multiple-access techniques in optical fiber networks- Part II: Systems performance analysis", IEEE Trans. Communications, vol. 37, no. 8, 8/1989, pp. 834-842.), of record, in view of Kahn (L. M. Kahn, "Optical power limiting in multilayer systems with nonlinear response", Phys. Rev. B, vol. 53, no. 3, 1/15/1996, pp. 1429-1437.), of record.

Salehi et al. discloses an optical logic device for processing information optically using the transmitted or reflected characteristics of at least one stable, optical hard limiter (See Section V; Figure 5). Salehi et al. lacks the optical hard limiter being non-absorbing and comprising alternating layers of materials with different linear indices and oppositely signed Kerr coefficients. However, Kahn teaches a particular type of optical hard limiter that utilizes a periodic lattice of layers having alternating linear and nonlinear refractive indices for power limiting (See Figure 1; Sections I-III). The power limiting occurs

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through Kerr nonlinearity, as opposed to absorption (See Sections I and V), wherein the transmission of light through the material is dependent on the light intensity (See Page 1429, col. 2-Page 1430, col. 1; Equation 2.1) and that the positive (or zero) and negative coefficients show up in the coefficient 'g' (See Sections II and III; Figure 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical hard limiter be non-absorbing and comprise alternating layers of materials with different linear indices and oppositely signed Kerr coefficients, as taught by Kahn, in the device of Salehi et al., for the purpose of reducing the effects of defects and light absorption on the optical limiting process, as well as provide a passive means of optically limiting light without the use of additional electrical input.

### ***Conclusion***

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the



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advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 10:00 AM - 6:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arnel C. Lavarias  
Primary Examiner  
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9/4/08

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